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EXAMINER	
PATEL, NIMESHKUMAR D	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/878,321	CHOI, JIN YEAL	
	Examin r	Art Unit	
	Dalei Dong	2875	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 November 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2 and 4-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 4-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 June 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 4-9, 22-23 and 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,031,325 to Amano in view of U.S. Patent No. 4,096,408 to Bozzay in further view of U.S. Patent No. 6,603,253 to Hasegawa.

Regarding to claims 1, 4-9, 22-23 and 28-29, Amano discloses in Figure 1A, "the electron gun comprises three cathodes 10A, 10B, and 10C, first electrode 11, second electrode, third electrode 13, fourth electrode 14, fifth electrodes, sixth electrode 16, and sealed cap 17. The fifth electrodes comprises a 5.sub.-1 electrode and a 5.sub.-2 electrode. The 5.sub.-1 electrode which is equivalent to a focus electrode is divided to the first focus electrode of 5.sub.-1A electrode 51A, second focus electrode of 5.sub.1B electrode 51B, and third focus electrode of 5.sub.-1C electrode 51C. Components other than the 5.sub.-1 electrode have the same structure as known, therefore detailed description is omitted" (column 7, line 60 to column8, line 3).

Amano also discloses in Figure 1A, "to the first and third focus electrode (5.sub.-1A electrode 51A and 5.sub.-1C electrode 51C), a focus voltage V.sub.F is applied through the stem ***(a plurality of stem pins, further it is old and well known in the art to***

have a plurality of stem pins for applying voltages to the electrodes) (not shown in the drawing). On the other hand, to the second focus electrode (5.sub.-1B electrode 51B), a voltage (V.sub.F +V.sub.DQ) that is a superimposed voltage of a dynamic quadrupole voltage V.sub.DQ having a saw-tooth waveform synchronous with horizontal deflection of the focus voltage V.sub.F applied to the first and third electrodes and the focus voltage V.sub.F is applied. Thereby, quadrupole action is exerted (acting) on the electron beam R and the electron beam B which pass through the electron beam passage apertures 21A, 22A, and 23A and 21C, 22C, and 23C respectively by means of the first, second, and third focus electrodes (5.sub.-1A electrode 51A, 5.sub.-1B electrode 51B, and 5.sub.-1C electrode 51C)" (column 9, line 12-26).

Amano further discloses in Figure 1A, "to the third electrode 13 and 5.sub.-2 electrode 52, a voltage that is a superimposed voltage (V.sub.F +V.sub.DF) of a dynamic focus voltage V.sub.DF (refer to FIG. 8) synchronous with horizontal deflection of the focus voltage V.sub.F applied to the 5.sub.-1C electrode 51C and the focus voltage V.sub.F is applied as in the related art. Thereby a quadrupole lens is formed between the 5.sub.-1C electrode 51C and 5.sub.-2 electrode 52, and the strength of the focus lens formed between the 5.sub.-2 electrode 52 and the sixth electrode 16 is varied. As the result, the shape of electron beams on the right and left periphery of the fluorescent screen is improved" (column 10, line 57-67).

However, Amano does not discloses a bead glass for holding the electrodes at fixed distances and a body of the wire between the one end and the other end of the wire is arranged so not to pass through a space formed between an outer surface of the bead

glass and an inner surface of a neck tube of the cathode ray tube. Bozzay teaches in Figure 2, "a cathode ray tube base 12 provides a plurality of electrical leads for introducing into the glass envelope the video and blanking signals as well as certain voltages for beam forming and focusing. The operating signals and voltages are conveyed to the electrodes of gun 10 within the envelope by means of internal electrical leads, two typical ones of which are shown by 14 ***(a body of wire arranged so as not to pass through a space formed between an outer surface of the bead glass and an inner surface of the neck tube of the cathode ray tube)***. The three electron-emitting cathodes 24 of the heater-cathode assembly 16 generate three coplanar beams of electrons 18, 20 and 22 which travel through a series of electrodes to energize the red, green and blue phosphors on the imaging surface of the television cathode ray tube through a multi-apertured color selection electrode (not shown). A unitized, disc-type accelerating grid 28 follows control grid 26 in the progression of the three electron beams from the cathodes 24 to the imaging screen. The three beams enter the electrostatic fields of the main focusing lens 30, consisting of unitized electrodes 32, 34, 36 and 38 constructed according to this invention. Each electrode in lens 30 carries a predetermined voltage to establish a beam focusing field, or an "electrostatic lens" for each beam. This type of lens, also referred to as an "extended field lens", utilizes the principles of the extended field lens described and claimed in U.S. Pat. No. 3,895,253 by Schwartz et al. Each electrode 32, 34, 36 and 38 is electrically isolated from the others to establish the focusing fields of the electron lens which they comprise, and each contain three electrically shielding beam-passing tubes therethrough formed from the electrode

material. The beam-passing tube concept does not constitute, per se, an aspect of this invention, but is described and claimed in copending application Ser. No. 655,592 filed Feb. 6, 1976" (column 3, line 22 to column 4, line 2). Bozzay also teaches in Figure 2, a bead glass 50 which holds the electrode at a fixed distance from each other.

Bozzay also teaches in Figure 3, "electrode support tab 55 has a distal end 62 and a stress-absorbing section 64, each having a specific function. The distal end 62 is fully embedded in the glass of structural bead 50, which is shown in section. The stress-absorbing section 64 is at most only partially embedded in bead 50, and acts to absorb stress that may be resident in both the bead 50 and electrode 32, with the result that the tendency toward bead cracking and electrode displacement is alleviated" (column 5, line 67-68 to column 6, line 1-8).

Furthermore, it is old and well known in the art to have wires wherein the body of the wire is arranged so as not to pass through a space formed between an outer surface of the bead glass closest to an inner surface of a neck tube of the cathode ray tube and an inner surface of a neck tube of the cathode ray tube closest to the bead glass. As shown in Hasegawa in Figure 2, "one end of a conductive metal wire 11 is welded to the cathodes KR, KG, KB, the heaters HR, HG, HB, the first electrode 10 and the second electrode 20. Also, one end of a conductive metal wire 21 is welded to the fourth electrode 40. Further, one end of a conductive metal wire 31 is welded to the third electrode 30 and the fifth electrode 50. On the other hand, the other end portions of these conductive metal wires 11, 21, 31 are arranged not to contact the electrodes and the other

wires in the neck 300, and the other ends of the conductive metal wires are welded to the stem pins 100" (column 8, lines 48-58).

Also shown in Figure 3 of Hasegawa, "the wire 31 is intended to apply a voltage close to the anode high voltage applied to the sixth electrode 60, which is a final accelerating electrode, to the fifth electrode 50 producing an electric field of a relatively high intensity in the neck 300 and to the third electrode connected to the fifth electrode 50. The electric field is likely to be concentrated in the edge portion of the wire 31 so as to deteriorate the withstanding voltage. Also, the distance from the fifth electrode 50 and the third electrode 30 to the stem pin 100 is longer than the distance between the other electrodes and the stem pin 100. Such being the situation, in order to prevent the wire 31 from being brought into contact with the other electrodes, a conductive lead wire having a circular cross section and a relatively large diameter is used as the wire 31 as shown in FIG. 3" (column 8, line 59 to column 9, line 6).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have arrange the wire or electrical lead and the bead glass of Bozzay and Hasegawa for the electron gun in a cathode ray tube of Amano in order to increase the electron-emitting efficiency and unitize electron gun while reduce stress and reduces the tendency of electrode displacement and suppressing the change in the cathode electrode current and, thus, capable of displaying a satisfactory image low in the color change.

3. Claims 2, 10-21, and 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,350,967 to Chen in view of U.S. Patent No. 4,096, 408 to Bozzay in further view of U.S. Patent No. 6,603,253 to Hasegawa.

Regarding to claims 2, 10-21 and 24-27, Chen discloses in Figures 5 and 6, a "side views of an electron gun 30 in accordance with the principles of the present invention. Electron gun 30 includes three equally spaced co-planar cathodes 32a, 32b and 32c (one for each beam), a control grid 34 (G.sub.1), a screen grid 36 (G.sub.2), a third electrode 38 (G.sub.3), a fourth electrode 40 (G.sub.4), a fifth electrode 42 (G.sub.5), where the G.sub.5 electrode includes a portion G.sub.5 ' identified as element 44, and a sixth electrode 46 (G.sub.6). The electrodes are spaced in the recited order from the cathodes 32a, 32b and 32c and are attached to a conventional support arrangement such as a pair of glass rods, which are not shown in the figure for simplicity. In the following discussion, the terms "electrode" and "grid" are used interchangeably" (column 5, line 53-66).

Chen also discloses in Figures 5 and 6, "cathodes 32a, 32b and 32c, the G.sub.1 electrode 34, the G.sub.2 electrode 36, and a portion of the G.sub.3 electrode 38 facing the G.sub.2 electrode comprise a beam forming region (BFR) 33 of the electron gun 30. Another portion of the G.sub.3 electrode 38, the G.sub.4 electrode 40, and a portion of the G.sub.5 electrode 42 facing the G.sub.4 electrode comprise a symmetric prefocus lens 35 of the electron gun 30. Facing portions of the G.sub.5 electrode 42 and the G.sub.5 ' electrode 44 form a dynamic quadrupole 37 as described below, while that portion of the G.sub.5 ' electrode facing the G.sub.6 electrode 46 and the G.sub.6 electrode itself form

the main focus lens 37 of electron gun 30. A magnetic deflection yoke 81 is disposed intermediate the G.sub.6 electrode and a display screen (not shown in the figure for simplicity) of a CRT in which the electron gun 30 is employed" (column 67-68 to column 6, line 1-14).

Chen further discloses in Figures 5 and 6,"various voltages, or potentials, as these terms are used interchangeably in the following discussion, are applied to the various electrodes as indicated in FIG. 5. For example, fixed voltages V.sub.F1, V.sub.F2 and V.sub.F3 are respectively applied to the G.sub.1, G.sub.2 and G.sub.3 electrodes 34, 36 and 38. Similarly, fixed voltages V.sub.F4 and V.sub.F5 are applied to the G.sub.4 electrode 40 and to the G.sub.5 electrode 42. A dynamic voltage V.sub.DYN is applied to the G.sub.5 ' electrode 44. The G.sub.3 and G.sub.5 electrodes 38, 42 are electrically interconnected and operate at the same potential of about 7 kV. The G.sub.6 electrode 46 operates at an anode potential of about 25 V, while the cathodes operate at about 150 V, the G.sub.1 electrode 34 is essentially at ground potential, and the G.sub.2 and G.sub.4 electrodes are electrically interconnected and operate within the range of about 300 V to 1000 V. The dynamic V.sub.DYN voltage applied to the G.sub.5 ' electrode 44 establishes a dynamic electrostatic quadrupole in between the G.sub.5 ' electrode and the facing portion of the G.sub.5 electrode 42. By applying to the G.sub.5 ' electrode 44 a dynamic differential focus voltage that ranges from the potential on the G.sub.5 electrode 42, with no deflection, to about 1000 volts more positive than the voltage applied to the G.sub.5 electrode at maximum deflection, the deflected electron beam

current density contour can be improved as set forth in U.S. Pat. No. 4,764,704" (column 6, line 15-43).

However, Chen does not disclose a wire having one end welded to the third electrode and the other end welded to stem pin, wherein the body of the wire is arranged so as not to pass through a space formed between an outer surface of the bead glass and an inner surface of a neck tube. Bozzay teaches in Figure 2, "a cathode ray tube base 12 provides a plurality of electrical leads for introducing into the glass envelope the video and blanking signals as well as certain voltages for beam forming and focusing. The operating signals and voltages are conveyed to the electrodes of gun 10 within the envelope by means of internal electrical leads, two typical ones of which are shown by 14" (column 3, line 37-44). As shown in Figure 3, the two exemplary electrical leads 14 of Bozzay consist of a straight portion and a bend portion, where the straight portion is parallel to the glass bead 50.

Bozzay also teaches in Figure 3, "electrode support tab 55 has a distal end 62 and a stress-absorbing section 64, each having a specific function. The distal end 62 is fully embedded in the glass of structural bead 50, which is shown in section. The stress-absorbing section 64 is at most only partially embedded in bead 50, and acts to absorb stress that may be resident in both the bead 50 and electrode 32, with the result that the tendency toward bead cracking and electrode displacement is alleviated" (column 5, line 67-68 to column 6, line 1-8).

Furthermore, it is old and well known in the art to have wires wherein the body of the wire is arranged so as not to pass through a space formed between an outer surface of

the bead glass closest to an inner surface of a neck tube of the cathode ray tube and an inner surface of a neck tube of the cathode ray tube closest to the bead glass. As shown in Hasegawa in Figure 2, "one end of a conductive metal wire 11 is welded to the cathodes KR, KG, KB, the heaters HR, HG, HB, the first electrode 10 and the second electrode 20. Also, one end of a conductive metal wire 21 is welded to the fourth electrode 40. Further, one end of a conductive metal wire 31 is welded to the third electrode 30 and the fifth electrode 50. On the other hand, the other end portions of these conductive metal wires 11, 21, 31 are arranged not to contact the electrodes and the other wires in the neck 300, and the other ends of the conductive metal wires are welded to the stem pins 100" (column 8, lines 48-58).

Also shown in Figure 3 of Hasegawa, "the wire 31 is intended to apply a voltage close to the anode high voltage applied to the sixth electrode 60, which is a final accelerating electrode, to the fifth electrode 50 producing an electric field of a relatively high intensity in the neck 300 and to the third electrode connected to the fifth electrode 50. The electric field is likely to be concentrated in the edge portion of the wire 31 so as to deteriorate the withstanding voltage. Also, the distance from the fifth electrode 50 and the third electrode 30 to the stem pin 100 is longer than the distance between the other electrodes and the stem pin 100. Such being the situation, in order to prevent the wire 31 from being brought into contact with the other electrodes, a conductive lead wire having a circular cross section and a relatively large diameter is used as the wire 31 as shown in FIG. 3" (column 8, line 59 to column 9, line 6).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have arranged the electrical leads of Bozzay and Hasegawa and the two glass beads of Bozzay for the electron gun of Chen in order to convey different operating signals and static voltage power to each individual electrodes, furthermore, unitized and enhance the structural integrity of the electron gun and reduces the tendency of electrode displacement and suppressing the change in the cathode electrode current and, thus, capable of displaying a satisfactory image low in the color change.

Response to Arguments

4. Applicant's arguments with respect to claims 1-29 have been considered but are moot in view of the new ground(s) of rejection.

In response to Applicant's primary argument that Bozzay reference fails to teach or suggest a wires wherein the body of the wire is arranged so as not to pass through a space formed between an outer surface of the bead glass closest to an inner surface of a neck tube of the cathode ray tube and an inner surface of a neck tube of the cathode ray tube closest to the bead glass. Examiner asserts it is old and well known in the art to have wires wherein the body of the wire is arranged so as not to pass through a space formed between an outer surface of the bead glass closest to an inner surface of a neck tube of the cathode ray tube and an inner surface of a neck tube of the cathode ray tube closest to the bead glass as shown in the prior art cited by the Examiner and Hasegawa reference where the wire pass on the side of the bead glass. Thus, Examiner asserts that Bozzay reference is valid.

Further, in response to Applicant's argument that Bozzay reference fails to teach or suggest a first wire having contact with the dynamic electrode and a second wire in contact with the static electrode. Examiner asserts that as clearly taught in the Chen reference a dynamic electrodes and a static electrodes, and it is inherent that the each electrodes has to be connected to a power source by a wire and Bozzay and Hasegawa reference teaches plurality of wires connecting each of the electrode of the cathode ray tube to a power source and merely duplication of the working parts and rearrangement of the wires are held to be only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8 and *In re Japikse*, 86 USPQ 70.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the

advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalei Dong whose telephone number is (703)308-2870 (after January 14, (571)272-2370). The examiner can normally be reached on 8 A.M. to 5 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on (703)305-4939 (after January 14, (571)272-2378). The fax phone number for the organization where this application or proceeding is assigned is (703)872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

D.D.
December 12, 2003

Sandra O'Shea
Supervisory Patent Examiner
Technology Center 2800